COMPARISON OF INHIBITORY EFFECTS BETWEEN NATURAL AND CHEMICAL ANTI-BROWNING AGENTS ON POLYPHENOL OXIDASE IN APPLE JUICE

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This Final Year Project Report entitled **"Comparison of Inhibitory Effects between Natural and Chemical Anti-browning Agents on Polyphenol Oxidase in Apple Juice"** was submitted by Nur Filza binti Mohd Fuad, in partial fulfilment of the requirements for the Degree of Bachelor of Science (Hons.) Biology, in the Faculty of Applied Sciences, and was approved by

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ABSTRACT

COMPARISON OF INHIBITORY EFFECTS BETWEEN NATURAL AND CHEMICAL ANTI-BROWNING AGENTS ON POLYPHENOL OXIDASE IN APPLE JUICE

Apple juice is known for its good taste and high content of nutrition. However, enzymatic browning easily occurred in it which reduce the product quality and nutrition value caused by activation of polyphenol oxidase. This is due to the damage of cell structure and contact between enzyme and substrate are promoted. Since the chemical anti-browning agent is limited due to short period time function, high cost or cause adverse health effect, development of natural anti-browning agent will be beneficial to overcome the disadvantages. The aim of this study were to compare the inhibitory effect and to determine the total phenolic content in naturally and chemically treated apple juice. The inhibition activity of both anti-browning agents were measured by performing polyphenol oxidase assay on the apple juice. The inhibitory activity of the ascorbic acid on apple juice PPO range from 33.02% to 96.26% compared to heated onion extract treatment which inhibitory activity reached its maximum at 69.16%. The total phenolic content in treated apple juice were determined using the Folin-Ciocalteu method with gallic acid as standard. Phenolic content of apple juice with ascorbic acid treatment was about 9.223 mg GAE/100 ml compared to apple juice treated with heated onion extract was 2.622 mg GAE/100 ml. Ascorbic acid treatment showed higher total phenolic content and lower polyphenol oxidase activity on apple juice compared to heated onion extract. Therefore, it can be concluded that higher total phenol content will cause lower polyphenol oxidase activity.